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What is a Sycamore?

IN an article called "Popular Errors," not long ago printed in a St. Louis newspaper, and thence copied into an eastern journal, the following paragraph appears:

"Another error in the application of names is noticeable in the vegetable world. This is with regard to the so-called Sycamore. The true Sycamore (*Acer Pseudo-platanus*) grows only in England, or, at most, in the British Isles. Our tree—*Plantanus occidentalis*—should be called Buttonwood. The true Sycamore is as worthless as Buckeye or Horse Chestnut."

It would be hard to find more errors combined in a single paragraph than appear in this one, which was intended to set wrong things exactly right, even if the mistake of printing Plantanus, instead of Platanus, be credited to the printer rather than the author.

Mistakes and confusions are, however, the very essence of popular plant-naming, and it may therefore be worth while to explain what is the right use of the name Sycamore, and to trace the steps by which it has come to be applied to three entirely different trees—*Ficus sycomorus*, *Acer Pseudo-platanus* and *Platanus occidentalis*.

Not the second, but the first of these, is the "true Sycamore." It is a tree of the Fig Family, very common in Palestine, Egypt and Arabia, where it grows to a great height, extends its branches over a wide area, and is much prized for the shade it affords. Its Figs are sweet and delicate, although it is not the species commonly cultivated for fruit. Its wood is light, but very durable, and was largely employed in ancient times. The mummy-cases of the Egyptians, and those wonderful sculptures in the round which have been found in the tombs of their earliest dynasties, were made of it. The name Sycamore is a combination of the two Greek words, *Sykon*, a Fig, and *Moron*, a Black Mulberry, and emphasizes the fact that the leaves of this Fig-tree resemble those of a Mulberry. This, then, is the Sycomorus of the Romans, the Sykomoros of the Greeks, the Sycamore of the Bible, the "true Sycamore" for all time. The most famous specimen now existing is perhaps that one not far from Cairo, which is believed to be more than two thousand years old, and is pointed out to travelers as the tree under which the Virgin and Child reposed during the flight into Egypt.

Acer Pseudo-platanus is a species of Maple. Although commonly called in England simply the Sycamore, it should be called the Sycamore Maple, the qualifying word merely explaining the likeness of its leaves to those of the true Sycamore. The statement that it grows only in the British Isles is far enough from the truth; for, while it is a native of the continent of Europe, and is found growing wild in many places there, especially in Germany, Austria, Switzerland and Italy, the first mention of it as growing on British soil is in Turner's "Herbal," printed in 1551, and all subsequent writers either deny or question the fact that it is indigenous to that soil. Nor is it a "worthless" tree, for its wood is much used in the delicate work of the makers of musical instruments, as well as for many other purposes. Pliny makes especial mention of three species of Maple among many which he believed to exist. One of these is undoubtedly the Sycamore Maple, and it seems to be the Maple mentioned by Virgil, as he speaks of the stature and strength of the tree and the durability of its wood. The confusion of its identity with that of the true Sycamore must have begun very long ago, for Evelyn, in the seventeenth century, mentions the fact that religious persons had then long been accustomed to plant the Sycamore Maple near their homes in the mistaken belief that it was the Sycamore into which Zacharias climbed to see the Saviour pass. For the same reason, its significance in old treatises on the language of flowers is "Curiosity." This tree has been much planted of late years in America, but is never called the Sycamore—always the Sycamore Maple.

Platanus occidentalis is the principal American representative of *Platanus orientalis*—the Plane tree of modern Europe and of ancient writers. In Europe the name Sycamore is never given to a Plane tree, but in America it seems to have been thus applied from early times, for the younger Michaux, writing early in the century, cites it as an accepted name, others being Buttonwood, Cotton-tree and Water Beech. According to him Plane trees were called Sycamores only in the Western States; but now-a-days, at all events, they are so called in many eastern districts. The fact appears to be that the English who had miscalled a Maple because of its striking, if superficial, resemblance to the true Sycamore, similarly miscalled the *Platanus occidentalis*, when they emigrated to America, because of its resemblance to the Maple they had left at home. The right name for the western as for the eastern *Platanus*, is the Plane tree; but Buttonwood is a perfectly legitimate, and, indeed, excellent name, as it has not been applied to any other kind of tree and is picturesquely descriptive of the fruit of the Plane. Water Beech is, of course, a patent misnomer, and Cotton-tree is not appropriate, and leads to confusion with Cottonwood, a species of Poplar.

Classic writers constantly refer to the Plane tree, and it was one of the most highly-prized trees of the more temperate parts of the Orient. On a Plane tree in Phrygia Marsyas was hung to be flayed by Apollo. Under a grove of giant Planes on an island off the Lacædemonian coast the youth of Sparta met for athletic exercises, and Pausanias mentions a Plane in Arcadia which was then said to be 1,300 years old and to have been planted by Menelaus. But the most famous Plane tree of antiquity was, perhaps, the one in Lycia, which so delighted Xerxes by its size and beauty that he caused it to be encircled with a collar of gold and delayed a whole day beneath its shade—a fact to which contemporary critics are said to have largely attributed the defeat of his expedition. The so-called "Seven Brothers" are seven huge and magnificent Planes which stand on the shores of the Bosphorus, as they stood when, in 1096, Godfrey de Bouillon and his Crusaders encamped in their vicinity, and are estimated to be at least 1,500 years old. The most famous Plane of our western world, if we may associate renowns so dis-

similar in duration, is the one which stood and perhaps still stands on an island in the Ohio River near the mouth of the Muskingum, which was measured by Washington in his early days and again by Michaux twenty years later, when its circumference was found to have but slightly increased and to be forty feet, four inches at five feet from the ground. It is a pigmy, however, in comparison with one of the Seven Brothers, which, it is stated measures 150 feet.

In Scotland, we are told, the Sycamore Maple is frequently called the Plane tree, and thus the cycle of confusion is complete.

The name we have been discussing is sometimes spelled Sycamore and sometimes Sycomore. Both spellings are permissible, but, although the use of the *o* seems more logical, in view of the derivation from *Sykon*, the *a* is preferred by the best modern English authorities. Most of them do not associate differences in spelling with different significations, but we have found it stated in one horticultural dictionary that the *o* should be used in writing of the true Sycamore and the *a* in writing of the Sycamore Maple. In modern foreign tongues the *o* is universally employed, and in colloquial French we find the same mistake as in colloquial English—*Sycomore* being constantly used in the stead of *Erable faux-platane*—Sycamore Maple.

How to Mask the Foundations of a Country House.—I.

NOTHING is more essential to the beauty of a country-place than that the foundations of the house should be properly connected with the ground from which they spring. The house should look as though it belonged where it stood and could not be moved to another spot without detriment; and all the devices of the gardener at a distance from its walls will not give it this appearance unless the walls themselves seem integrally united to the soil.

The first step towards the production of this effect must be taken by the architect. Not very many years ago a broken, irregular site was considered, in this country, undesirable for building on, and, when it could not be avoided, was often levelled that the foundations might be made as mechanically symmetrical as possible. But of late our architects have realized the folly of neglecting the chance to unite a house well with its site and at the same time to secure individuality and, possibly, great picturesqueness, and have seen that it is still more foolish to spend time and money in destroying such a chance when it cannot be evaded.

When the slopes of an irregular site are gentle and devoid of stones a beautiful result can be achieved by respecting their undulations, laying more or fewer courses of masonry according as they fall or rise, and bringing the grass up to the walls in an uneven, billowy, yet not too broken line. No better example of such treatment can be found than in the Public Library at Quincy, Massachusetts, a work of Richardson's which has been familiarized by repeated illustrations. When the site is rocky and when local stone can be used, rough-faced, for the foundations, as charming a result of a more strikingly picturesque kind can be achieved, as we see in Richardson's Public Library at North Easton—where the rock-like turret seems almost to have grown naturally from the rocky hillside—and in many cottages along the north shore of Massachusetts Bay, built by Mr. Emerson and others. To have levelled such sites as these would have injured the house as greatly as the grounds about it. Now the two are in harmony and each helps the effect of the other; while as the formation of such sites is never twice alike, each home has that most desirable of qualities—individuality.

But even in cases where Nature has given the architect a good chance to blend his work with hers something more is needed to make the union seem perfect; and this is doubly the case when the site is flat and the house must stand like a box upon a floor. Some simple arrangement of terraces may then be used with advantage if there is a difference of level between the spot where the house stands and the adjacent street or pleasure-grounds. But always something more is necessary—always the planter must be called in to help the architect whether Nature has helped him much or little.

Nature has helped him most, of course, when the site is very broken and rocky. Then the planting of a few vines against the walls may often suffice to bring them into a close enough union with Mother Earth. It is a pity, however, that when vines are relied upon to do this service, a single kind should so often be chosen for repeated planting. A little thought in the selection of different kinds which harmonize, yet contrast, would produce a far more beautiful effect. It is well on a city house to let Wistaria or Japanese Ivy alone clothe the walls. Here there is no question of uniting site and walls, and we do not want variety or picturesqueness in a street facade even though it be a very wide one. A symmetrical architectonic effect should be preserved, and for this purpose a Wistaria trained on two or three wires stretched to the roof or a close covering of Japanese Ivy is better than would be an intermingling of two or more different kinds of foliage. But on a country house, especially of the irregular, picturesque kind we most often build, the presence of a single sort of vine produces an undesirable monotony. In some parts it will look best to have a vine which clings very closely to the walls; in others a more massed and freer growth will be preferable; and contrasts of color, density and habit in the clothing foliage will add immensely to the general effect.

But when the vines are once planted they should not be allowed to grow at their own sweet will. A house is not like a ruin or a cliff or a blasted tree where the wilder and more erratic the growth of the creeper the more charming and appropriate is the effect. It is (or should be) a work of art to which all its immediate surroundings are subordinate; and as its prime end is to give its owners comfortable shelter, it should always present—no matter how great its picturesqueness—a neat, orderly, well-tended aspect. Its vines, therefore, should be intelligently pruned and trained—not allowed to run ragged yet not forced into unattractive, unnatural stiffness. They should be pruned, but the fact that they have been pruned should not be apparent. Nor should they ever be allowed to cover a house entirely or to so great a degree that its architectural character is concealed—unless, indeed, this character be such that it deserves a shroud. To build a solid lower story of stone and then allow it to be entirely hidden, even during half the year, by a dense growth of foliage, is surely a mistake. Not only is the beauty of the stone-work concealed, but the effect of the upper stories, based, apparently, upon a substructure of fluttering leaves, is unsatisfactory to the eye. Vines enough may be grown to beautify the walls in the highest possible degree and unite them well with the ground and yet spaces be reserved, below as well as above, where the constructed surface shall appear—spaces which will indicate the character of the walls as a whole and thus prevent the eye from questioning the stability of any part. It is a good plan, also, to train some vines so that they spread over portions of the ground and thus make the transition between the soil and the wall seem still more natural. A mass of Honeysuckle, for instance, running out over rock or grass for a little distance is a very beautiful object, and its bloom will seem even more profuse in this than in an upright position.

The Art of Gardening—An Historical Sketch.—VII. Persia (continued).

IT is noteworthy that even princely Persians did not confine themselves to enjoying parks and gardens but shared in their creation. Strabo says that after the active exercises of the day were over young Persian noblemen were taught to plant trees as well as to forge armor and weave hunting-nets. When the Spartan Lysander visited the "paradise" of Cyrus the Younger at Sardis, he said:* "I look with astonishment on all these trees on account of their beauty, but am still more astonished at the art of him who measured out the ground and arranged them for you." Cyrus, on hearing this, "was delighted," and said: "It was I, let me tell you, Lysander, that measured out the ground and arranged all the trees myself; and there are some of them that I planted with my own hands. Whenever I am in health I never dine until I have put myself into a perspiration by pursuing some military or agricultural occupation, or by contending for superiority in some exercise of a similar nature." Lysander may well have been surprised; despite the active temperament of the Greeks they left manual toil to their slaves, and to hear agricultural coupled with military exercises, as similar in dignity and interest, must indeed have been a novel sensation.

What now were the gardens of these Persians who created them on so extensive a scale and valued them so highly? In speaking of the parks of Bazaria, where Alexander hunted lions, Quintus Curtius says:† "A spacious wood in which

*Xenophon, *The Economist.*

†Life of Alexander.

numerous unfailing springs give cheerfulness to the scenery is selected, encompassed with a high wall, and interspersed with towers for the reception of the hunters"; and some writers have believed that this brief account describes the character of Persian *paradeisoi* in general—that they were merely portions of ground which Nature herself had made beautiful, carefully protected from hurtful alterations. But Plutarch is careful to relate that the park in which Artaxerxes permitted his soldiers to despoil for firewood stood "in the midst of a region naked, and without trees"; and if these special words imply, perhaps, nothing more than a natural oasis in a wilderness, there are others which more definitely indicate the arts of cultivation and arrangement. Plutarch says of the park which Tissaphernes named for Alcibiades—a true *paradeisos*, not a mere garden—that it contained "salubrious streams and meadows," but also "pavilions and places of retirement royally and exquisitely adorned"; and wherever in ancient times there were buildings that could be thus described, the adjacent landscape must likewise have been "royally and exquisitely adorned"—not left in the wild graces of nature. It is only in modern days that men have failed to perceive that the essence of beauty is harmony; that the essence of harmony is the likeness in fundamental character of one thing to another; that architectural beauty and the untouched beauty of nature, though equal in value, are dissimilar in character; and that each must be accommodated to the other if a satisfying general effect is to be the result. No Egyptian, Assyrian, Persian or Greek would have allowed the virgin forest or the untended champaign to come up close to the walls of temple or palace. In the park at Celænæ where Cyrus the Younger reviewed 13,000 troops, there were of course vast open spaces; yet through the middle of it, says Xenophon, ran the river Mæander. "Its springs issue from the palace itself, and it runs also through the city of Celænæ." A park which lay between palace and city, and a river which ran from beneath the palace itself, certainly imply some degree of formal, architectural treatment.

Several passages which I have already quoted show that trees were extensively planted by the Persians. Nor was it only in situations where they could not possibly have grown by themselves, as in city streets and squares, for the parks which Cyrus the Younger formed during his journeys were "stocked with everything good and valuable that the soil will produce;" and the scene where Lysander expressed his astonishment at Cyrus's personal prowess in tree-planting was the famous *paradeisos* at Sardis. This last-named incident, I may say in conclusion, gives us decisive proof that in such great parks a portion of the planting, at least, was done in a strictly formal way. Lysander admired not only the beauty of the trees, but "how regularly they were planted, how straight the rows of them were and how elegantly all the rows formed angles with one another." *

At "Shushan the Palace," as described in the book of Esther Ahasuerus held his great feast in the "court of the garden," which was hung about with embroidered draperies. The Persians used columns profusely, although the Assyrians and Babylonians did not. Ahasuerus has been identified with Xerxes, and in the splendid palace of this king at Persepolis may still be seen a wide, unwalled space with various groups of stately columns, sometimes called the "summer throne-room," which may well have been planted like a garden and used for feasts and audiences. Or, if "Shushan the Palace" means Susa, here also may be traced the remains of a similar court-yard.

In short, we may conclude that in Persia the art of gardening meant a combination or alternation of formal with natural-seeming arrangements. Symmetrical court-yards, regular plantations and stone-walled canals gave harmony to the neighborhood of buildings and formed adjuncts to such magnificent terraces and external stairs as we see at Persepolis, while more distant parts of the domain were left in their natural state or merely beautified without losing their character; and cultivation was everywhere carefully practiced. Are not the ideals of the intelligent modern artist foreshadowed in these facts? And must we not deeply regret that we know so little about the parks of the Persians? One can hardly imagine a more interesting relic of antiquity than a plan of a *paradeisos* could it be recovered—preferably, perhaps, the plan which would show us how Cyrus arranged his pleasure-ground at Celænæ so that he could hunt wild beasts within its limits yet review a great army in safety, and so that it formed a harmonious setting for the palace with a river flowing from its base.

When Pliny wrote in his "Natural History" that "the first Plane-trees that were spoken of in terms of admiration were those which adorned the walks of the Academy at Athens," he had in mind only Greece and Italy. He must have been familiar with Herodotus' story of the giant Plane that so delighted Xerxes near the borders of the Hellespont, when he was marching towards Greece, that he lingered for an entire day beneath its shade—imperiling his expedition by the act—decorated it with a golden circlet and left an officer of rank to serve as its guardian. In explaining the different varieties of Palms, Pliny says: "The most famous of all are those which, for the sake of distinction, have received the name of 'royal' Palms because they were preserved solely by the kings of Persia. These used to grow nowhere but at Babylon, and there only in the garden of Bagoas, the eunuch; . . . this garden was always carefully retained within the precincts of the royal court." Anecdotes like this help us to divine the almost passionate love that the Persians had for trees; and so many plants now familiar in European lands have come from Persia that we may fancy its gardens rich with a variety of beautiful blossoms as well as with those odorous shrubs the cultivation of which was rendered necessary by a profuse employment of perfumes and unguents.

New York. *M. G. Van Rensselaer.*

* "A person of high spirit and honor, naturally a king though fatally prevented by the harmless accident of post-geniture, not only a lord of gardens but a manual planter thereof, disposing his trees like his armies in regular ordination . . . all stories do look upon Cyrus as the splendid and regular planter." These words occur in "The Garden of Cyrus," a curious and interesting treatise by the famous seventeenth century writer, Sir Thomas Browne. The essay, however, like many of its time, is but loosely connected with its title. Accepting Cicero's statement that the regular rows and angles which Lysander admired in the plantations of Cyrus meant an arrangement in "quincunxes"—in a succession of patterns like that on a five-spot of cards—Sir Thomas passes into a rambling dissertation, finding, as Coleridge said, "quincunxes in heaven above, quincunxes in earth below, quincunxes in the mind of man, quincunxes in tones, in optic nerves, in roots of trees, in leaves, in everything."

Notes Upon Some North American Trees.—II.

21. PORLIERA ANGUSTIFOLIA, Gray.—This is a common plant on the dry plains of the lower Rio Grande valley, where I have observed it in Texas and Mexico. It is everywhere a low, upright shrub, with thickened stems, which are rarely six feet high. It cannot in any sense be considered a tree, and must be dropped from the Silva.

22. XANTHOXYLUM AMERICANUM, Miller. — Although this plant may be grown in gardens into a small tree with the aid of skillful pruning, it does not appear to become naturally a tree anywhere, and it should be dropped from the Silva.

23. XANTHOXYLUM CARIBÆUM, Lam.—The proper name of this south Florida tree, which was first described by Nuttall (Sylva iii, *t.* 85) as *X. Floridanum*, is still in doubt. It has been referred to the West Indian *X. Caribæum*, which is said to be prickly, while the Florida plant is quite unarmed. It differs, also, in some minor characters from the description of Lamark's plant. Professor Gray doubtfully proposed to call the Florida tree *X. Caribæum* var. *Floridanum* (*Proc. Am. Acad.*, new ser. xxiii. 225), but it will be necessary to examine authentic specimens of the different West Indian species before this question of nomenclature is settled.

XANTHOXYLUM EMARGINATUM, Sw.—This handsome plant was collected by the late Dr. Garber in 1877 on Virginia Key, in Bay Biscayne, Florida. It has not been seen elsewhere in Florida, where it is probably exceedingly rare. It was not found by Mr. A. H. Curtiss, who has carefully explored the flora of the Florida Keys, and I failed to detect it anywhere on the shores of Bay Biscayne, to which I have made three separate journeys. Professor T. C. Porter, who has placed, most obligingly, his specimens in my hands, informs me that Mr. Garber left no notes upon this plant, which both Macfayden and Grisebach speak of as a tree or shrub. It may, perhaps, properly therefore find a place in the North American Silva. More information of its habit of growth, and of the size which it attains is, however, desirable. I am quite ignorant of the character of the bark of this plant, of the nature of the wood which it produces, and of the situations and soil in which it is found. Professor Porter calls my attention to the fact that some of the leaflets on the Florida specimens are obtusely pointed, the others emarginate as described by Swartz and by Grisebach, who gives (Fl. Brit. West Indies, 137), under *Tobinia emarginata*, the full synonymy of this species. A specimen

collected on the Island of New Providence by William Cooper in 1859, is preserved in the Herbarium of Columbia College. This plant is apparently widely distributed through the West Indies.

Helietta parvifolia, Benth.—Dr. V. Harvard detected this plant growing very abundantly as a shrub on the bluffs of the lower Rio Grande, on the Texas side of the river (*Proc. U. S. Nat. Mus.*, viii. i., 515); and I found it near Seralvo, south of the river, where it is a slender tree, twenty or twenty-five feet high, so that it should find a place in our Silva in *Rutaceæ*, immediately after Xanthoxylum.

Kœberlinia spinosa, Zucc.—This plant, which is widely distributed from the valley of the lower Rio Grande to San Luis Potosi and to Chihuahua, must be included among the North American trees. It is often shrubby in its habit of growth, especially in Texas, but sometimes becomes truly arborescent, with a straight, erect trunk, six or eight feet long, and a round, compact head. Its place in the Catalogue is in *Simarubeæ*, immediately before Simaruba.

30. Amyris sylvatica, Jacq.—I follow Professor Gray (*l. c.*) in referring our south Florida tree to *A. maritima* of Jacquin. The exposition of the confused synonymy of this plant will be found in the paper cited.

32. Ximenia Americana, L.—I have never seen this plant growing as a tree. It is common on all the south Florida Keys as a spreading shrub, sometimes with stout, nearly prostrate stems ten or twelve feet long, and eight or ten inches in diameter at the ground. I propose, therefore, to omit it from the Silva.

Ilex monticola, Gray.—This species was not included in the Census Catalogue. It is a widely-distributed plant through the Appalachian Mountains from New York to Alabama, generally as a low shrub, but I have seen it on the slopes of the Blue Ridge, both in North and South Carolina, especially near Highlands in Macon County of the former state, growing as a tree thirty or forty feet high, with a clean, straight trunk ten or twelve inches in diameter. It should find a place in the Silva immediately following *Ilex decidua*, Nutt. (No. 36).

38. Cliftonia ligustrina, Spreng. — Mr. Watson has pointed out (*Bulletin Torrey Botanical Club*, xiv., 167) that the oldest name for this plant is *Cliftonia nitida*, Gærtn, fil. (Fruct. iii., 247, *t.* 225, *f.* 5).

40. Myginda pallens, Smith.—This, it now appears, is a shrubby species, and should therefore be dropped from the North American Silva and replaced by *Myginda integrifolia*, Lam, as I have pointed out in the *Botanical Gazette* (xi., 313). This last is the *M. latifolia* of Chapman's "Flora of the Southern States," and was early confounded with *M. pallens* in American herbaria. *M. integrifolia* is truly arborescent upon Key West, where it is abundant and reaches a height of twenty or twenty-five feet, with a straight, slender trunk, often six inches in diameter. The fruit is two-celled, although sometimes one-celled by abortion. *C. S. Sargent.*

Platanus occidentalis.

OUR western Plane (*Platanus occidentalis*) is the largest deciduous tree of the American forests. It rises sometimes from the deep, alluvial soil deposited over the margins of streams in the valley of the Mississippi, to a height of a hundred and forty feet by actual measurement, with a tall, straight shaft, fourteen or fifteen feet in diameter. One of these large trunks appears in our illustration upon page 354. Such trees were common many years ago, in the valley of the lower Ohio and in those of its tributaries. Now they are rarely seen. The disturbances of natural conditions which always follow man into the wilderness are bringing to the forests in all our western country their inevitable consequences. When the surroundings of an old tree, which may have grown undisturbed through centuries, and which left undisturbed might have continued to grow through other centuries, are once invaded by man, its subsequent history is generally short. The picture of another old Plane-tree and its characteristic surroundings, on page 355, shows what the fate of these forest giants is likely to be. An old tree which has grown always among other trees, and has been supported by its fellows, when suddenly deprived of this support, must soon die. Either the first severe gale will blow over the tall, badly-balanced trunk with all its weight of branches at the summit, or it will die gradually as the tree in the second picture is dying from the sudden exposure to the full sunlight of the trunk and branches, which were developed in the shade of other trees. The danger from wind is increased in the case of the Plane-tree, by the fact that these very large specimens, like the individual which appears in our illustration on page 354, are entirely hollow for a long distance above the ground. It is probable that these very large Plane-trees will disappear entirely, and that at the end of another century, and perhaps much sooner, such great trees as excited the wonder and fired the imagination of the early travelers on the Ohio, the Cumberland and the Illinois will be entirely unknown, The specimens which are now large will have died naturally, or prematurely through the interference of man, and younger trees must, in the future, be sacrificed to the demand for the wood which this tree yields, and which has lately become esteemed and is already largely used for many purposes.

Our two illustrations are made from photographs taken by Mr. Robert Ridgway in the valley of the White River, in southern Indiana—a region once famed for the beauty and varied character of its forests and for the great size attained by its individual trees.

Foreign Correspondence.

London Letter.

AT the last meeting of the committee of the Royal Horticultural Society, new Roses were the leading features of the exhibition, Mr. William Paul having a dozen or more novelties. Only two of them, however, were commented upon—Pink Rover and Duchess of Albany. The first is a climbing Bourbon, with flowers of the size and form of the old Souvenir de Malmaison and with the habit of Gloire de Dijon, vigorous and of a decided climbing habit. The delicate pink of the large, full bloom is very pleasing, but as the committee are very cautious in certificating new Roses before their true character is known, Pink Rover must be seen again and again. The Duchess of Albany is simply a sport from La France, differing from it only in color, being several shades darker, and some rosarians do not think this a desirable variation, as one charm of La France is its delicate pink hue. For all that the Duchess has its admirers. The best of the other novelties from William Paul included Magenta Queen, a bright magenta flower of good form and substance; Hero of Waltham, similar to but lighter than Beauty of Waltham; Spenser, in the way of Baroness Rothschild, but with more substance in the flower; Salamander, a good, deep crimson, and Marchioness of Lorne, a very free bloomer, said to be a capital garden Rose. There was also a lovely little Moss Rose called Waltham Pet, with white flowers and pink centres, a suitable companion for Little Gem. Sappho, the fine Tea Rose certificated some time ago was shown well, the singular nankeen-yellow tint being fully developed in the open air. Medea, a new Tea in the way of Madame Caroline Kuster, may be heard of later on as a good addition to the pale yellow group.

The chief among the other exhibits shown at this meeting were hardy flowers, as on the last occasion, the Pæonies, Pyrethrums and Delphiniums from Kelway, of Langport, and the Lilies from Ware & Barr being remarkable. Orchids are dropping off now conspicuously, and yesterday there were only half a dozen shown, the most noteworthy of these being two new hybrids from Messrs. Veitch, raised by their indefatigable foreman, Mr. Seden. One of these was *Zygocolax leopardinum*, raised between *Colax jugosus* and *Zygopetalum maxillare*. It is, therefore, a bigeneric hybrid, assuming that the Colax is a true genus. The hybrid resembles the Zygopetalum, both in habit of growth, in size and form of flower, but differs in color. The lip is of a very deep plum-purple, the sepals olive-green copiously spotted with cinnamon-brown. Though interesting to Orchid fanciers, it posesses no special merit to the general cultivator. The other hybrid was *Masdevallia Ellisiana*, a cross between *M. Harryana*

and *M. ignea*. It reminds one of *M. amabilis*, but has quite the form of flower of *M. ignea*. The color is intermediate. If it proves a winter bloomer, as *M. ignea* is, it will be a good addition to cool Orchids. There were two varieties of Cattleya shown, both having the lateral sepals feathered with deep purple on a pale mauve ground. One was called *C. Mendelii Hallæ*, which had in addition a very brilliant labellum, and *C. Gaskelliana Sunray*, which differed from the ordinary forms only by the feathering. The very remarkable *Dendrobium Stratiotes*, from the South Pacific, was shown in flower, and, as it has seldom been seen, it created some interest. Like *D. taurinum*, to which group it belongs, it has peculiarly shaped flowers produced on short spikes from the last year's growths. It has narrow, whitish sepals, and the two petals are pinkish and stand erect, and, being twisted, remind one of the horns of an ibex. The labellum is beautifully adorned with rich purple reticulations on a pure white ground. It is among the most beautiful and distinct of all Dendrobiums.

Lilies of all kinds are just now in perfection, and among the great number shown were not a few new or uncommon varieties. The white form of *L. Martagon* was shown in grand condition by Mr. Ware, with stems a yard high, carrying conical spikes of pure white blossoms. Though an old sort, this is still rare, and, as it is so beautiful, it is the desire of all hardy plant-lovers to possess it. Another form of *L. Martagon* which I do not remember to have seen before was Punctatum, which has whitish flowers spotted with crimson, but it is not nearly so effective as the white or the blackish-crimson variety, Dalmaticum. Several American Lilies were shown, and of *L. pardalinum* there were some interesting forms. A hybrid between *L. pardalinum* and *L. parvum*, and named *L. pumilum*, was sent up as a new plant, but as it has not the noble beauty of the one or the pretty form of flower of the other, it was not considered worthy of an award. Of *L. parvum* there was a beautiful variety with scarlet flowers like those of *Fritillaria recurva*. It was named *L. alpinum*, but was evidently only a form of *L. parvum*. Of the lovely *L. Parryi* from the Rocky Mountains there were some fine specimens from the open border, some bearing four to five flowers on a stem. The rich canary-yellow of the fragrant blossoms renders it already a much-talked-of plant, and it is likely to prove a hardy and vigorous grower. There was a greatly admired group of *L. auratum* and other Lilies intermixed with dwarf plants of Japanese Maples. The elegant foliage of the Maples quite disguised the rigid stems of the Lilies, and with their different shades of green produced a charming effect. A very noble and handsome Indian Lily was shown by Messrs. Low, of Clapton, and the committee were unanimous in awarding a first-class certificate to it. It was named *Lilium Wallechi*, var. *superbum*, it being finer in all respects than the typical form. The plant shown had a stem about six feet high, clothed from top to bottom with long, narrow leaves, and surmounted by two flowers about nine inches in length, trumpet-shaped and of ivory whiteness. It is, unfortunately, not hardy, but will prove a superb plant for the green-house. This is the second Indian Lily Messrs. Low have introduced recently, the other being *L. Nepalense*.

Messrs. Veitch showed a fine gathering of flowering branches of some choice, hardy shrubs, including the very elegant *Zenobia speciosa* and its variety *pulverulenta*, both first-rate American peat shrubs. The variety is most popular because the glaucescence of the leaves go so well with the pearl-white flowers which look like magnified Lily-of-the-Valley flowers. *Styrax Japonica*, which is quite hardy as a standard here, was again shown in abundant bloom. Its flowers are an inch across, pure white with yellow stamens, reminding one of the old green-house climber, *Solanum jasminoides*. *Leptospermum baccatum*, similar to, if not identical with, *L. scoparium*, is also hardy at Coombe wood, though a native of Australia. It is scarcely showy enough in flower to recommend it to general cultivation, though the specialist in trees and shrubs will be delighted with it. *W. Goldring.*

"Having disposed the masses of trees, shrubs, etc., with reference to the general effect of the whole scene, we come now to the finishing touches of decoration—flowers.

"From the general love of flowers and their increasing varieties, we frequently see the breadth and repose of the lawn sacrificed to them. In a flower-garden, properly so-called, they hold undivided sway, and are at liberty to cover the whole surface and to assume every variety of form that fancy may dictate; but when flowers are admitted to the dress ground we have been considering, they must be amenable to the laws of composition, otherwise they injure the scenery they are intended to adorn." *W. S. Gilpin, 1832.*

Cultural Department.

California Lilies.

EIGHT distinct species of Lilies are native to California, besides varieties. They are *Lilium Columbianum*, *L. Humboldti*, *L. pardalinum*, *L. parvum*, *L. Parryi*, *L. maritimum*, *L. Washingtonianum* and *L. rubescens*. No other country in the world is so rich in these floral beauties, except Japan. Their range is from the sea-coast of Mendocino County to the edge of perpetual snow in the Sierras. Old Shasta's sides are the home of several species.

I have found *L. Humboldti* in the rich alluvium of the upper Sacramento Valley, and *L. Parryi*, one of the most beautiful, is a native of the high mountains of San Bernardino and San Diego Counties.

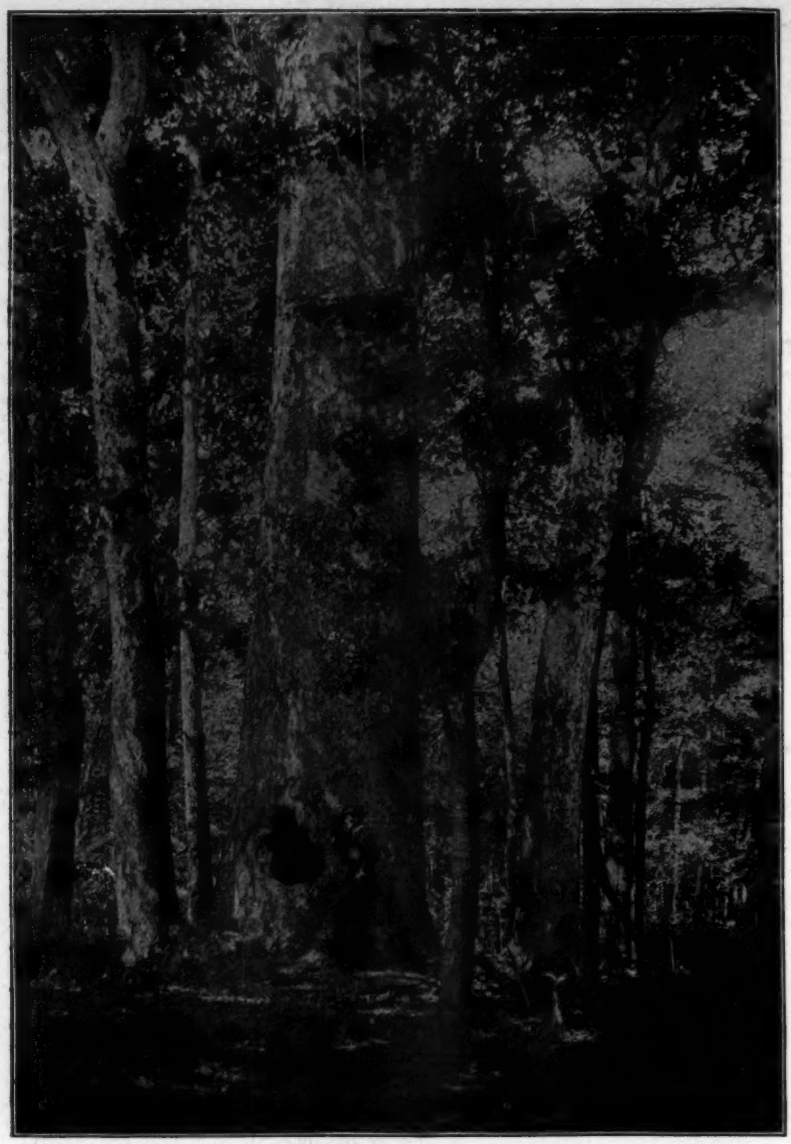
As a collector I have taken many thousands of the bulbs of six of these species from their native homes, and have grown all but *L. Parryi*. In the soil in which they flourish and the manner of root-growth they vary greatly. Briefly it may be said that *L. maritimum*, *L. pardalinum*, *L. parvum* and *L. Parryi* are bog lilies with running or rhizomatous roots; that *L. Humboldti* and *L. Columbianum* are native to rich, clayey soils, and that *L. Washingtonianum* and *L. rubescens* rot easily in cold or wet soils, that they are true bulbs, and that they thrive in well-drained soil of leaf-mould mixed with disintegrated sandstone or gravel.

L. pardalinum, often called Tiger Lily, by the country people, is the most easily grown of all. It has an erect stem with many long, lanceolate, pale green leaves, in whorls. The flower is large and showy; the petals, bright crimson at tips, orange dotted or blotched with black at centre, and recurved to the stem. There are few more brilliant sights than a well bloomed plant of this Lily. The root is hardy and little subject to rot. It prefers a rich sandy mould, but adapts itself to varying conditions. In a shaded pond I saw fine specimens on the mould on old logs, the fibrous root running down into the water. They were six to seven feet high with the finest of blossoms. In the rich mould below mountain springs, or in the alluvium on the banks of small streams, they grow to perfection. I have seen them doing well in sandy soil which in midsummer was as dry as a brick. In cultivation I have seen the best results from planting in a sunken barrel filled with sand well mixed with leaf-mould or bog soil. It should be kept moist, not wet, and is better in the shade. The bulbs should be planted about four inches deep. Under such conditions strong plants grow five to seven feet high, with an abundance of bloom. Once planted, the roots should be undisturbed. They spread rapidly increasing in geometrical ratio. The bulb of this year throws out two growing roots this fall, each of these throws out two next fall, etc. When the clump gets too thick, the soil can be taken off and the smaller roots removed without disturbing the ones to be left. I have seen clumps of four or five hundred in the wild state, the produce of one bulb. Both leaf and flower of *L. pardalinum* have wide variations, and three or four varieties are named, but it is hard to lay down a dividing line, as the varieties run into each other.

L. Californicum is a variety with narrow leaves, and a brilliant flower; the tips of the petals a rich crimson and the dots small. *Var puberulum* has paler flowers and broad leaves. The English florists have found a clear yellow form which they call *L. Warei*, but I have never been able to secure a specimen.

L. maritimum is one of the rarest in cultivation; this is for a double reason. The bulb is difficult to handle, being particularly liable to decay when disturbed. Then, too, its range of growth is limited. It grows in and around peat bogs, on the coast of Mendocino County—rarely farther north or south. It is seldom seen farther than two miles from the ocean. The surface of these bogs is dotted with clumps of Ferns and Azaleas. Around the bogs is a waste of gray, ashy-looking sand, densely covered with Heath, Cypress and Pines. On the edges of the bogs, the Lily is a dwarf, often blooming at three or four inches. In the bogs it roots itself in the tufts, and becomes a lovely plant, five feet high with ten or fifteen fine blossoms. The leaves are dark glossy green, and the blossom crimson. At Ukiah I have grown it easily in a reclaimed swamp in the shade. The soil is of vegetable matter and always moist. In the same situation *L. parvum*, *L. pardalinum*, *L. Columbianum* and *L. Humboldti*, as well as the Japanese *L. auratum* make a vigorous growth, and, what is not usual for the latter, strong bulbs. At Ukiah there is little fog, and there are days in the summer when the thermometer will register more than one hundred degrees.

Lilium Parryi is similiar to *L. pardalinum* in leaf and bulb, but the bloom is lemon-yellow and very fragrant. Of its



Platanus occidentalis.—See page 352.

cultivation I cannot speak, but believe it easy of culture under the same conditions as *L. pardalinum*.

L. Columbianum is *L. Humboldti* in miniature. The bulb is small and compact. The stalk is two feet or so high, and the flowers true lily-shaped, the petals recurved. In color it is a light orange-yellow dotted with dark spots. This Lily has for its native home the plains of the Columbia River. It is easy to grow in cultivation only needing a well drained loam and ordinary moisture.

The bulb of *L. Humboldti* is often a pound in weight and very compact. The stalk is strong and stiff. The leaves are arranged in circles or whorls and are many in number. Eight or ten blossoms to the stalk are not unusual. These are of a reddish orange with round dark spots. Ordinarily this Lily will grow to a height of three or four feet. The finest specimen it has been my fortune to meet grew in the débris by the side of a Sierra stream. It was over eight feet high and had an enormous bulb. This Lily increases by seed only, in its native state, and where the natural conditions happen to be exactly suitable it is found in great numbers. I took over eight thousand good bulbs from one place some years ago. It was on a hillside in volcanic soil, where years ago the gold miners had cut the timber. I had spent the previous week in hard traveling to find five hundred. I once found fine bulbs of *L. Humboldti* in an Oak-grove near Chico. They were doing splendidly in the black adobe of that section. In cultivation, this Lily will thrive in clay loam or sandy loam. In hot sections it does better planted in the shade. It needs to be planted six inches to a foot deep, and will give the grower value received. High up in the Sierras above the pine-timber on those grand slopes covered with a mixed growth of Wild Cherry, Manzanita and Ceanothus, *L. Washingtonianum* finds its most congenial home. The soil is loose, decomposed granite and mould. The snow lies very deep in the winter and is late in melting. It keeps the bulbs moist in their early growth, and when it is gone they make a very rapid growth, often blooming six or eight weeks after the snow has melted. The stalk grows up from three to five feet, densely leaved in whorls, and with from five to twenty-five flowers, pure white and with a most delicious fragrance. I have seen places fairly white with this Lily and the air heavy with perfume. The bulb is large. I have bloomed it at Ukiah, but find it rather harder to bloom than any of the other native Lilies. I believe, however, that it is grown quite successfully in England. It should be given a loose soil and abundant moisture during the growing season.

Lilium rubescens is like *L. Washingtonianum* in every particular excepting that the flower blooms out pure white blotched with purple, and gradually gets darker till it is of rich ruby color, hence its name. Similar as the two Lilies are in habit, their native home is very different. *L. Washingtonianum* is a Lily of the high Sierras, *L. rubescens* of the Coast Range. It is found in the Redwoods close to the coast, on shaded hillsides in sandstone gravel, and on high ridges in the chapparal. The finest I have ever seen in numbers were on a chapparal ridge in a soil of gravel mixed with mould, the ordinary chapparal soil. The bulb grows deep and has abundant moisture in winter and spring, but in the summer such places get very dry. A friend of mine grows and blooms them readily in half barrels filled with sand and mould and placed in the shade. The first essentials with them is perfect drainage and a loose, porous soil. Of all our California Lilies it is the most beautiful, and of all Lilies it is the most deliciously fragrant. A flower will perfume the leaves of a book for months, and a well grown plant is the admiration of all beholders.—*Carl Purdy* in *California Florist*.

Orchid Notes.

Motions of Orchid Flowers.—Of all the numerous Orchids exhibited at the recent show of the Royal Horticultural Society, held in the Temple Gardens, in London, none proved such a centre of attraction as the remarkable little *Bulbophyllum barbigerum*, exhibited by the President, Sir Trevor Lawrence. It was, indeed, difficult to get near the plant at all, such a crowd of visitors was there, all eager to obtain a sight of the curious little plant, whose beautifully fringed labellums were continually in motion. Curiosity, perhaps, prompted many people to see it; indeed, it was this that first drew my own attention. Whatever could it be which held together that cluster of people over whose shoulders others were trying to peep? "Why, it's alive," said one, and, on getting a little closer, the cause of the commotion became apparent. There was a curious little plant in a basket of some six inches in diameter, bearing a short, drooping raceme of reddish-purple flowers, each of which had a smallish lip margined with numerous long hairs, the whole nearly an inch long, perhaps,

and these were continually popping up and down in the most remarkable fashion. "The delightful little athlete," the *Gardeners' Chronicle* calls it.

Being somewhat curious to know the cause of these singular movements, and being fully aware of the delicate hinge by which the lip, in this genus, is attached to the column, I carefully watched it for some seconds, and soon concluded that currents of air were the cause of disturbance; a conclusion abundantly confirmed by a gentle puff of the breath, which caused an unusual amount of commotion. So the exercise of the little "athlete" is of quite a passive nature, after all.

It appears to be some curious provision for securing fertilization of the flowers, the movements of the labellum probably serving to attract the attention of curious insects.

The singular little *Masdevallia muscosa* is, perhaps, still more remarkable. It appears from an account which has recently been published, that the lip of this plant is sensitive, and has a movement as definite as that of the remarkable *Dionæa muscipula*, or "Venus' Fly-trap." The habit of the plant is almost that of the well-known *M. Harryana*, but smaller, the flowers standing some six inches high; light yellow in color, the tube of the sepals short, the lip long and protruding, and much narrowed behind. When the flower opens the lip hangs pendulous underneath, but when an insect alights on the lip, and touches a small cushion-like disc, situated some distance from the apex, the lip suddenly shuts up tight against the column, moving through an angle of 80° or 90° in two seconds. The Masdevallia is not as bloodthirsty as the Dionœa, for the insect is not tightly boxed in, nor does the plant forthwith proceed to devour and digest its victim. There is a way of escape between the two petals and the face of the column, but the insect can scarcely fail to carry away the pollen-masses in making its exit, and there can be little doubt that on visiting a second flower it comes in contact with the stigma, and thus fertilization is effected.

This is not all. The plant regularly goes to sleep at night—that is to say, it closes up tight—but positively refuses to sleep in the daytime; for two hours in a dark cellar are reported to have made no impression on it. The slightest touch with a hair on the sensitive cushion causes the lip to close suddenly, but after a short time it gradually opens again. Another remarkable point about the plant is that the peduncles are completely covered with greenish-yellow moss-like bristles, which have been well compared to those of a Moss Rose. There is no climbing up some other way. Ants have been observed to make the attempt, but eventually had to give it up in disgust. It is supposed that this is the particular use of these bristles, to keep away robber-insects. Those who would pay their respects must come in a legitimate way, and alight on the flower itself. Quite a little chapter of romance; but one would suspect that the insect goes away with rather mixed feelings after its first visit. *Calypso.*

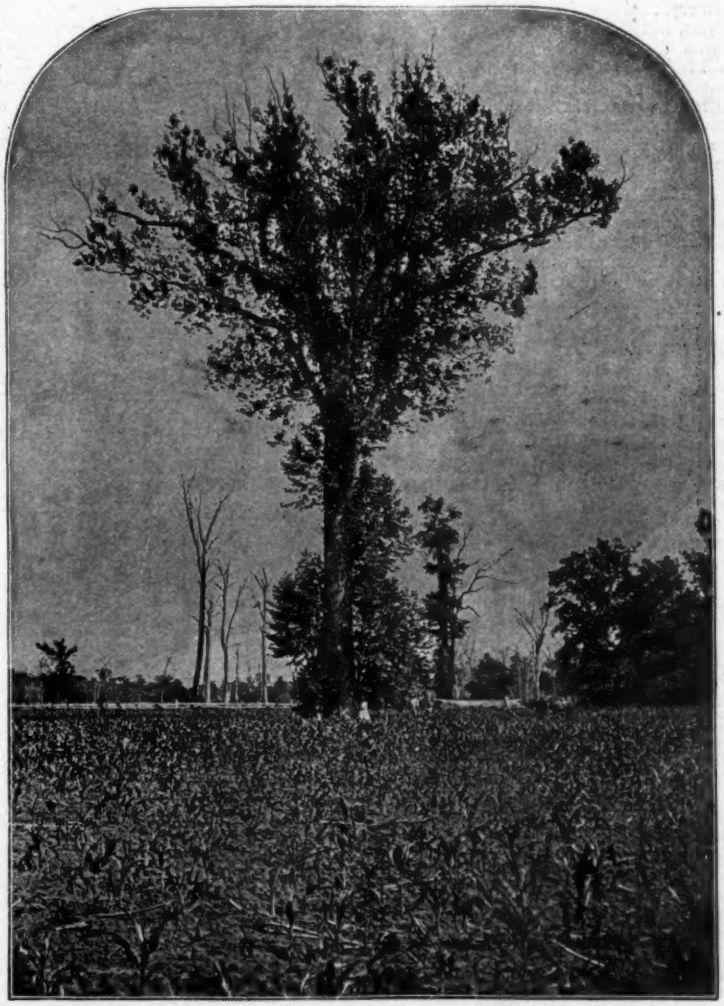
London.

The genus Brassia derives its name from Mr. William Brass, who, towards the end of the eighteenth century, was sent as a botanical collector to Cape Coast and the surrounding districts by Sir Joseph Banks. There are several species known, but owing to the dingy color of the flowers of most of them, there are only a few which present sufficient beauty to entitle them to the consideration of the cultivator. Both *B. maculata* and *B. verrucosa* are now freely flowering here. The former is the oldest representative of the genus, of which it is the type, having been first made known to cultivation in 1806, when it was discovered in Jamaica. It has dark green, ovoid, compressed pseudo-bulbs, surmounted by a pair of spreading strap-shaped leaves. From nine to twelve flowers are borne on erect, arching spikes, about two feet long, which spring from the base of the pseudo-bulbs. The yellowish-green sepals are linear-lanceolate acute, and channelled on the front surface, the lower portion of which has several dark, dull purple blotches; the incurved petals are similar in shape and color to the sepals, but are only about half as long, and the dull purple blotches are not so dense, having the ground color showing through in minute spots. The cordate acute lip is large and conspicuous; it is recurved at the apex, and the creamy-yellow surface is sprinkled over with purple-brown spots, while at the base there are two short orange-yellow ridges or crests. The specific name of Maculata was suggested to R. Brown, who first described this plant in "Hortus Kewensis," by the spots or blotches on the flowers, but it might be here mentioned that the flowers of all the species are more or less spotted in a similar manner.

B. verrucosa resembles the preceding species in habit, but has thicker pseudo-bulbs, somewhat furrowed and ridged, and narrower leaves. The sepals are about five inches long, pale yellowish-green, with a few dark reddish-brown spots at the base; the petals are only about two inches in length, of the same color, but more thickly covered with spots. The anterior half of the pandurate-cuspidate lip is pure white, abruptly changing to greenish-yellow on the lower half, which is studded with conspicuous green warts—a characteristic from which the plant received the specific name given by Dr. Lindley. This species flowered for the first time in England in April, 1840, in the nurseries of Messrs. Rollison, at Tooting, who had received plants of it from Mexico. Since that time, however, it has also been collected in Guatemala.

I might mention here that a few weeks ago at a London sale I noticed a fine specimen of this species which bore seven erect, arching spikes about two and a half feet long, each having from fourteen to eighteen flowers, which collectively presented a most striking appearance.

The culture of Brassias presents no particular difficulty. They will succeed either in well-drained pots or baskets,



Platanus occidentalis.—A Characteristic Western Scene.—See page 352.

although the former seem to be more generally used. A compost of rough, fibrous peat suits them best, and during the summer months, when the plants are making their growths, they should be watered frequently and thoroughly. During the winter months very little water is required to keep the pseudo-bulbs plump and fresh, but care should be taken not to withhold it until the plants begin to shrivel. The winter temperature during the day should be about 65° or 70° Fahr., sinking five or six degrees lower at night. In summer the night temperature should not be allowed to sink below 65° Fahr., while in the day it may rise from 70° to 80° Fahr.

St. Albans. *John Weathers.*

Odontoglossum Alexandræ.—Only of late years has the finest form of this beautiful Orchid been introduced. Among the early importations the majority of the plants consisted of the variety with very narrow, thin-petaled flowers. These are now rapidly giving place to the broad, round-petaled type, which, during the past seven years, has been imported in considerable numbers. Mr. Frederick L. Ames, of North Easton, Massachusetts, has some very remarkable specimens in luxuriant health, with broad, deep-green foliage and stout well-formed pseudo-bulbs, from the base of which I recently observed no fewer than 200 spikes carrying massive blossoms well shaped and, in many instances, beautifully marked, spotted and fringed. In this wonderful display I noted the scarce *O. Wilckeanum*, carrying dozens of its striking yellow and brown flowers, *O. luteopurpureum*, *O. Pescatorei*, bearing on many-branched stems a profusion of lovely white blossoms, and several handsome plants of *O. vexillarium*, with six to eight richly-colored flowers on a spike. A fine specimen of *Oncidium macranthum*, with a spike measuring seven feet in length, was carrying many of its enormous olive-brown and bright yellow flowers, and specimens of the bright scarlet *Masdevallia Harryana*, helped to make this a paradise of Orchid flowers. The plants here noted occupied a structure facing north, the back wall being covered with moss and ferns, which are kept continually moist, maintaining at all times an atmosphere full of humidity, which is one of the necessities of successful cultivation. *O. Alexandræ* is of easy culture and grows freely during the spring months, but during July, August and September great care must be taken to provide cool quarters, or the intense heat of this season will prove detrimental. Where extensively grown, north houses have proved the best for this Orchid, being cool, airy and light. While growing they delight in abundance of air and water, and when the flowering season is past they should be re-potted in a mixture of peat, sphagnum and decayed leaves, in equal proportions. Of all Odontoglossums grown few equal this for purity and durability of blossom, and when grown, as it is here, it must prove valuable as a florist's flower.

Summit, N. J. *A. Dimmock.*

Planting Roses for Winter Bloom.

THIS operation is an important part of the work in many establishments at this season, and demands the exercise of great care and judgment. Careless planting is doubtless responsible for many failures that are attributed to other causes. The benches or beds having been prepared for planting by being refilled with good soil, in which has been mixed a proper proportion of good manure, some air-slaked lime should be added if the soil is inclined to be clayey; and if the soil is very dry when brought into the houses it will be found better to give it a good watering the day before beginning to plant, so that it will be moist enough to work nicely. The plants to be set out should be well watered a few hours before they are turned out of the pots, this being very necessary, from the fact that when the old ball of earth is dry at the time of planting, it will be found almost impossible to get it wet afterward without making the entire bed sodden, and a poor start, followed by a weak and unsatisfactory growth, soon shows the effect of this error. This point of having the plants moist at the time of transplanting is one of especial importance, and is essential to the welfare of the future crop of flowers.

It will also be advisable to leave the plants in their pots until they are actually needed for planting, as the tender young roots are easily injured if exposed to the direct rays of the sun for even a short space of time. In planting, the soil should be pressed firmly around the plant without breaking the ball, after which a good watering should be given so as to settle the soil. If the weather should prove very hot and dry at this time a light shading on the glass will be beneficial to the young plants, but it should be removed as soon as the Roses become established in their new quarters. For several days after planting it is well to keep the house a little closer in regard to ventilation, gradually increasing the amount of air admitted as the plants take hold of the new soil, but always bearing in mind the fact that Roses are not stove-plants, and will not flourish if kept too hot.

As a preventive measure it is best to give the plants a dusting with sulphur after planting, as the germs of mildew are frequently present at this season, and awaiting a favorable opportunity to attach themselves to the young growth of the Roses, and this will at once check and disfigure it. It should be remembered that young Roses recently planted are not in a condition to assimilate large quantities of manure, and it will therefore be found best to defer heavy mulching or other application of strong fertilizers until the plants have become better established.

Holmesburg, Pa. *W. H. Taplin.*

Notes on Wild Flowers.

Actæa spicata, var. *rubra* (Red Baneberry), is one of the early spring flowers. The chief beauty, however, of the plant is in the ample spike of cherry-red berries, which are now ripe. The foliage is also a handsome dark green. The plant will thrive in moist soil in either sun or shade.

Phlox pilosa is nearly past flower. It is one of the best of the hardy Phloxes, and remains a long time in flower. It is a slender plant, nearly a foot high, with large heads of rose-pink flowers. It takes readily to cultivation, and will thrive in any ordinary soil.

Asclepias incarnata (Swamp Milk-weed) is just beginning to bloom. It is a desirable plant for cultivation, and may be found in many of the wholesale lists of European nurserymen. It grows nearly three feet high, usually bearing several heads of rose-purple flowers. The plant is easily grown in ordinary soil.

Bloomeria aurea, a plant belonging to the Lily family from southern California, is now in flower. It grows nearly a foot high, bearing at the top a dense umbel of pretty yellow flowers half an inch or more in diameter. These flowers do not all open together, and the plant is a long time in flowering. We have had the best success with this plant when set in autumn and covered with leaves to protect it from frost.

Rudbeckia hirta (Cone-flower), although too common in many of our meadows, is a more showy plant when in flower than the rarer *R. laciniata*. The plant is generally about two feet high. The flowers are darkish yellow with a dark purple centre, and are often nearly three inches wide. It will thrive in any ordinary soil, and, when stimulated by cultivation is very fine.

Calochortus albus, var. *paniculatus* (Butterfly Tulip), is one of the finest of this genus. The plant grows from six to eight inches high, bearing several showy white flowers nearly an inch wide. Another pretty species is *C. pulchellus*, with numerous bright yellow flowers a little more than half an inch wide. The flowers of both remain fresh several days. They are both Californian plants and need to be protected from frost. We have had better success in wintering them in the ground and protecting with a covering of leaves than in the cellar. They like a warm, well-drained, loamy soil.

Brodiæa laxa and *B. ixoides* are both natives of California. The former is a slender plant hardly a foot high, bearing a loose umbel of large, showy blue flowers, which remain fresh several days. The latter has smaller flowers, yellow with a darker stripe, several on a plant. Its height is about the same as the first. Both need protection from frost, or should be wintered in dry soil in the cellar.

Charlotte, Vt., July 2. *F. H. Horsford.*

Two Good Hardy Plants.—A recent issue of the *Gardeners' Chronicle* contains excellent figures of two fine hardy plants, *Chrysanthemum maximum* and *C. lacustre*. There has been much confusion about the names of these plants since their first introduction. We received from a well-known English firm *C. lacustre* as *C. maximum*, but were subsequently informed that the so-called *C. maximum* was the true *C. latifolium*, the former being a totally distinct plant, and so it has proved. Now, it appears that the name *C. latifolium* is not correct and must be replaced by *C. lacustre*. It is to be hoped that the two species are properly defined at last, since both are showy and desirable border plants. The true *C. maximum* is of somewhat spreading habit, the flower-stems attaining a height of eighteen inches. The flowers are two inches in diameter, with yellow discs and white ray petals of good substance and very suitable for cutting. *C. lacustre* is much taller when treated liberally, having erect shoots three or four feet high surmounted with flowers similar to those of *C. maximum* but

much larger, with the edges of the petals recurved. This plant is a native of Portugal, but has lived out here during the past two winters without protection. *C. maximum* is a native of the Pyrenees and near the Stelvio Pass, so that we may reasonably expect it to prove hardy in our eastern States, since Stelvio Pass is 9,100 feet above the sea and the highest carriage route in Europe. Now, that the Marguerites are so much used for floral decoration, both the above plants should find favor with growers, as both are eminently suitable for cutting purposes.

Symphyandra Hoffmanni is the name of a new and very beautiful Campanulaceous plant, which was figured and described last year as flowering at Kew for the first time, and is now flowering freely in the grounds here, and proves to be a valuable plant for the border. It grows about two feet high and is much branched, forming a compact plant, which has for some weeks been covered over with a profusion of large pure white cylindrical bells, reminding one forcibly of *Campanula nobilis*. Other species of this genus are biennial and *S. Hoffmanni* may also prove so, although it offers, at present, no indications of that character. But even if it is, seeds are produced in abundance and these germinate readily. Our plants were raised last year and planted in rich, moist soil, and there they wintered safely without any further care, and they are now covered with flowers and buds that promise to maintain a succession of bloom until frost.

Passaic, N. J. *O.*

Roses in Open Ground.—So far this has been a very peculiar season for these plants. Most of the Hybrid Perpetuals did well at blooming time, but they do not appear to be making much growth since, and all kinds of destructive larvæ are preying upon them. Of the newer varieties the best, so far in this locality, has been Mrs. John Laing. Though not of a very hardy constitution, its pale-pink color, fine form and delightful fragrance make it a very desirable variety, and it is a splendid autumn bloomer. Earl of Dufferin is a grand Rose of a deep bright crimson, very fragrant and of a good constitution. Lady Helen Stewart is another first-class Rose, with a good, vigorous constitution. Ulrich Brunner, though not particularly new, nor yet generally planted is pleasing in shape and color. Queen of Queens has again proved one of the best bedding Roses, of a pale shaded-pink color and very attractive in every way. To my mind, however, the best Rose of this class introduced to this country this year is Gloire de Margottin. It is the clearest bright red yet introduced, very fragrant, a strong grower and a Rose that pleases every one who sees it. Last of all is that grand Rose, Madame Gabriel Luizet. With its satin-pink color and unsurpassed fragrance it has few equals, and it should be in every garden no matter how small. If it were my fate to be deprived of every Rose but one for growing in the open air, I should choose this one above all others. It is still producing some good flowers, and will continue to do so all summer at intervals. The monthly or everblooming Roses are not growing very well in this section, except where extra good, strong plants were put out early.

Summit, N. J. *John N. May.*

The Vegetable Garden.—It is not too late to plant Lettuce, Spinach, Turnip, Corn Salad, Kale and many other vegetables, but to secure double crops the soil must be full of plant-food from frequent applications of fertilizers in former years. Cucumbers, Melons, Lettuce, Egg-plant, Spinach, Onion and many other crops demand hearty and constant food for their best growth. This can be illustrated more plainly when the crops are maturing than at any other time, for this truth is then brought home with convincing power if the crops do not promise a good reward for the labor given to them. If, on a close inspection, a growing crop seems less vigorous than it should, there are reasons for the failure. The soil may have been too compact, too dry or too wet; but lack of fertility is, four times out of five, the cause of backwardness. And the remedy should be applied at once, in the form of some high-grade commercial fertilizer, especially prepared for garden crops. This application is valuable now in any backward garden. Scatter it along near the growing plants, and hoe or dig it into the soil with as little injury to the roots as possible. If not too long deferred, this treatment will effect a striking change in color and vigor of growth.

Hampden Co., Mass. *W. H. Bull.*

Fine Flavor in Fruit.—As the period for the ripening of large fruits is approaching, it may be well to remind inexperienced cultivators of the importance of high culture for the development of the finest quality. Some years ago, two St. Ghislain Pear-trees bore fruit so unlike that they would not be recognized as the same variety. There was almost no similarity in flavor. One tree, bearing poor fruit, stood in a thick grass sod; the other, with excellent Pears, was kept well cultivated. Early Pears, as well as early Peaches, on crowded trees, which ripen first on the tree, are much inferior in flavor to those which come later. The first are grown so thickly on the branches that they cannot sufficiently mature; those which ripen later, after the early portion of the crop has been removed, have plenty of space to develop their fine quality. Hence the great advantage of early thinning. Take the Summer Doyenné Pear, for instance. Those which are first ripe on densely crowded limbs are about half the size of those which ripen last, and strikingly inferior to them in quality. So with early Peaches—the last scattered ones on the tree are commonly observed to be greatly superior in flavor to the first which ripen. These facts teach the importance of good cultivation and of thinning the fruit on crowded trees, both of which operations will always repay the grower in large, beautiful and excellent fruit, instead of small, knotty and flavorless specimens.—*Country Gentleman.*

Periodical Literature.

THE most interesting articles in the June number of the Kew Bulletin of *Miscellaneous Information* are the following:

Jamaica Cogwood.—This has long been known as one of the most valuable woods produced in the forests of Jamaica, and in the flourishing days of Jamaica sugar-planting it was everywhere in demand for framing mills and for the cogs of machinery. It is durable in water, and tough, hard and heavy. But although this wood has been used for centuries, and the trees which produced it almost exterminated, it is only now that their true name and botanical affinities have been made out. It was long supposed to be a Laurel and then a Ceanothus, but at last sufficient material has been obtained to enable Professor Oliver to make out that the Cogwood-tree is a Zizyphus (*Z. Chloroxylon*), a genus not represented before in the Jamaica flora.

Cocoanut Coir from Lagos.—Large nurseries of young Cocoanut plants have been established by the Colonial Government of Lagos, and seedlings are distributed at very low rates, with the view of making the cultivation of this plant in the colony as general as possible. Samples of the fibre recently sent, experimentally, to London, owing, perhaps, to defective methods of preparation and shipment, have not been very well spoken of by experts.

A Wheat Pest in Cyprus.—A report upon a species of Tineina, an insect destructive to wheat crops in Cyprus.

Patchouli.—An abstract of an article entitled the "Cultivation and Curing of Patchouli and its Adulterations," from the *Journal of the Agricultural and Horticultural Society of India*, a portion of which we reproduce here:

The plant yielding the perfume known as Patchouli is usually stated to be indigenous to the Malayan Peninsula, but there appears to be no evidence that it has been met with in the jungle, except in places where it could be clearly traced to some old cultivation.

It is grown and much esteemed by the aboriginal tribes of Perak and Pallang, and is met with at an altitude of nearly 5,000 feet amongst the Sakais of the mountains, far away from any Malayan villages.

The leaves are made into garlands and worn round the waist by the women, and bunches of them are often stuck into their bamboo ear-rings. They are also mixed with other leaves and flowers and formed into ornamental bunches, which are hung up and used in some sort of demon worship or propitiation.

Patchouli is a very shy flowerer, so much so that by the natives it is said never to flower, and a dealer, who has grown and bought it for the last thirty years, has never seen or heard of such a thing as a flower or fruit. Mr. N. Cantley, in "Notes on Economic Plants," says: "Plants raised from seed are reported to grow well but to have no scent, but retain it when produced from cuttings. I have not been able to verify these statements, but it is well known that plants do sometimes play tricks of this kind—Sandal-wood frequently." If this report was obtained from native sources it, probably, only represents another way of saying that the plant hardly ever bears seed.

The cultivation of Patchouli is carried on almost exclusively by the Chinese in the Straits Settlements. They do not grow it on a large scale, but a man will plant a patch of perhaps half an acre or an acre at a time. The land is trenched and thrown up into long beds either four feet or eighteen inches wide. The former of these will take two rows of plants, and

the latter only one. The plants are put two feet part along the rows. The planting is done in the wet season, and the cuttings, which are about a foot long, require careful shading with leaves until rooted, or they will get withered and die, the plant being a delicate one, and very susceptible to the heat of the sun.

The first cutting of the crop is made in about six months after planting, by which time the Patchouli will have reached a height of two to three feet, and two other cuttings are made from the same plants at intervals of about six months. At the end of this time the old roots are dug up, the land re-trenched and fresh cuttings planted.

No reliable information as to the yield per acre nor the cost of cultivation is accessible, but it must be rather high, as the land has to be thrown up into beds, manured and carefully weeded and the cuttings shaded, and, if dry weather sets in before they are rooted, they have to be watered until established. The plant seems to flourish best under slight shade, but, probably, the production of oil is less in that grown under shade than in that grown out in the sun, though the yield of leaf would be greater. It is often planted on new land between Coffee, Nutmegs and other permanent crops, and is said to pay all the expenses of clearing and planting, leaving the permanent crop as clear profit.

The plants are cut down near the ground when they have reached a sufficient size, one stalk only being left to each bush. The Patchouli is then laid out in the sun to dry in the daytime, and put under cover at night and on the approach of rain. When thoroughly dry it is done up into bales, and sold either to dealers in the leaves or to the distillers. In this state it fetches about six dollars a hundred pounds.

The dealers cut it up and separate a great quantity of the larger stalks, and, according to its freedom from these, it is classed as first, second or third quality. The best consists of leaves only, and is valued at $20 to $24 a hundred; but, owing to the labor involved, this quality hardly pays to prepare. The second quality is composed of leaves and young shoots with little of the heavier stalk, and ranges in price from $13 to $15 a hundred. The third quality contains less leaf and more stalk, and fetches about $10 a hundred.

The best quality of all would be produced by picking from the plants the leaves and tops of the young shoots, and drying these in the shade, but it is doubtful if it would pay. Prepared in this way thirty-six pounds of green leaves produce ten pounds of dried Patchouli.

Large quantities of the leaves of a plant known by the Malayan name of Ruku are often mixed with Patchouli. The botanical name of this plant is *Ocimum Basilicum*, L., var. *pilosum*. A Chinaman recently bought the whole of the Ruku growing wild in a Cocoanut plantation in Province Wellesley, and twenty-eight tons of the dried herb were collected and taken to Penang to be used for the adulteration of the more valuable Patchouli. European dealers prefer to buy the plant just as it is cut, when it is easy to see if it is adulterated or not, but if the leaves are bought it is very hard to detect the imposition. The leaves of another plant are also often mixed with Patchouli. This plant (*Urena lobata*) is called *Perpulut* by the Malays, and is to be had in any quantity for the trouble of collecting it.

The dried Patchouli is put into a large copper cylinder fitted with a perforated false bottom and mounted on trunnions. Through one of these steam enters from a boiler and is conducted by a tube beneath the false bottom. The remaining trunnion is also hollow, and the steam under a ten-pound pressure, after passing through the leaves, passes out by it and into a worm immersed in a tube of water in the ordinary way.

One hundred pounds of the dried Patchouli, just as it is cut, yields from eighteen to twenty-two ounces of essential oil, and a sample free from the heavier stalks yields about double that amount. By an ordinary still not more than one-half of the oil can be extracted. The green leaves yield little or no oil, and therefore it is necessary that they be dried before being subjected to the process of distillation. The oil is of two varieties, the one being sage green, and the other the color of medium-colored sherry.

Sometimes the one color is in greater demand that the other, but the prices are the same for both. At present the price in Penang is about fifty cents per ounce. Both kinds of oil when fresh are limpid and quite fluid at ordinary temperatures, but at 40° F. they become rather thicker, but remain bright and clear. The golden-brown oil has a specific gravity of 9580 at 85° F., and the green oil a specific gravity of 9578 at the same temperature.

Oil has been kept for ten years in a bottle with a loose stopper, when it becomes of a dark brown color and of a syrupy consistency. The scent of this old oil, however, is little inferior to fresh, though not quite so powerful. This bears out the statement in Ure's Dictionary of Arts, that "the essential oil of Patchouli is one of the least volatile of any known, hence it is one of the most persistent of perfumes from plants."

Mr. N. Cantley, Superintendent of the Botanical Gardens, Singapore, says: "Plants of Patchouli have been in demand for experimental planting, and a good number have been supplied. Pickled leaves are now selling at $12 per hundred. The plants grow freely with but little care, and should figure among colonial products." This statement, although correct as far as it goes, gives a mistaken idea of the circumstances of the case. The production now is quite equal to the demand, which seems to be very limited, consequently the market is soon glutted, particularly with the oil. Unless, therefore, the use of the leaves and oil could be very materially increased, there seems to be no prospect of profitably cultivating it on a large scale.

Correspondence.

Forests and Civilization.—III. The North Woods.

To the Editor of GARDEN AND FOREST:

Sir.—It now seems probable that a great World's Fair, or International Exposition, will be held in the City of New York in 1892. If this is done a complete and well-arranged exhibition of the wood-products of this country should be one of the chief features, and the fair should be used as an occasion and means for stimulating public interest in forestry, tree-culture, landscape art, the management of parks and public grounds and related subjects. There should be an elementary department for the benefit of the good people who like to see trees smothering each other to death, and who think it is a crime to cut a tree down under any circumstances. As some savage races like harsh noises better than music, so some persons appear to feel as much pleasure in an ugly tree as in a beautiful one.

Such an exhibition of forest-products, as a part of an International Exhibition which will be visited by intelligent and thoughtful men from all civilized lands, can be made highly interesting and serviceable, and the friends of forestry in this country should at once begin to consider plans to secure its completeness and success. Some preparatory action looking to this end will probably be taken by the American Forestry Congress during its session at Philadelphia in October of this year.

One of the most important and useful features or adjuncts that could be connected with such an exposition would be an exhibition of the Adirondack region itself, as an actual, concrete illustration of our treatment of one of the most remarkable forests in the whole world. There should be arrangements for excursions, for visitors to the Fair, through different parts of this mountain region, and especially across the great tracts that have been destroyed by fire. It would be an interesting lesson to intelligent European visitors. They might write for their own journals descriptions of what they see, which if republished here would be valuable as criticisms from independent sources; and some of our own people who think that no very serious injury has been wrought here might bring their theories regarding the value of forests, as natural storage reservoirs for water, into a little closer relation with facts if they would take the trouble to come and look at the country.

When in Washington last winter I met a number of gentlemen connected with one of the departments of the Government, who asked me if the impression which is produced by the report of the New York Forestry Commission for 1885, regarding the denudation of Adirondack hills, is not an exaggeration of the facts. This is the report of Messrs. Sargent, James, Shepard and Poucher. It was based upon a more careful and thorough examination of the condition of the entire Adirondack region than had ever been made before, and all its representations are of the most moderate character. Most of them are far within the limits of the truth. The photographs, of course, exhibit faithfully the scenes which they represent. Nobody can question that fact, but the Washington people thought there were probably but a few places like those which are shown in these pictures, and that those were tracts of small extent, so that the aggregate denudation is really, they supposed, of but slight importance.

The truth is that the tracts represented by these photographs are so extensive as to constitute an important proportion of the whole Adirondack region. There are hundreds of such places as that which is shown in the picture called "An Adirondack Farm," facing page 5 of the Report. The soil was never fit

for cultivation. Now it is exhausted and ruined, and the inhabitants are starved and dwarfed in body and mind. The pictures of the Indian River country, and of the Hudson River above North Creek, exhibit accurately the desolation of regions of appalling extent. The one showing the appearance of the denuded hills of the Hudson watershed, following page 14, represents precisely as it was at that time the condition of broad hill-tops and slopes which were once covered with glorious forests. I looked at these hills a few days ago. Their appearance has not changed perceptibly in five years. The pictures are still accurate. I wish that these pictures, or photographs of similar places, could be reproduced in GARDEN AND FOREST. Making allowance for geological differences they would show what will yet be seen in Pennsylvania and other mountain forest-regions of our country, unless a great and almost impossible change is speedily wrought in the character and habits of the people of our country.

Years ago I wrote from here: "Last week I rode through the 'Schroon Country' with a man who has probably done as much as any one to desolate this whole region. From Minerva, past Pottersville, Schroon Lake, Schroon River (Roots Hotel), and on along the Elizabethtown road past Deadwater to the new road that leads through the forest to Smith Beedy's, we traveled all day long through a blighted and hopeless land. As league after league of utter desolation unrolled before and around us, we became more and more silent. At last my companion exclaimed: 'This whole country's gone to the devil, hasn't it?' I asked what was, more than anything else, the reason or cause of it. After long thought he replied: 'It all comes to this—it was because there was nobody to think about it, or to do anything about it. We were all busy, and all somewhat to blame, perhaps. But it was a large matter, and needed the co-operation of many men, and there was no opening, no place to begin a new order of things here. I could do nothing alone, and my neighbor could do nothing alone, and there was nobody to set us to work together on a plan to have things better; nobody to represent the common object. Why did not you come along to talk to us about it years and years ago?'"

During the last two days I have passed over the same ground. The aspect of the country is the same, except that the gullies in some places are deeper and wider, and where there is clay or sand the erosion increases. Where there is life there is change, but these dead regions, hills of bare rock, and valleys of desolate sand are little changed from year to year. Extensive tracts here will be much the same a century from now.

I hope all the visitors to the great World's Fair in 1892, who are interested in forestry subjects, will come and see the "Schroon Country," taking the route I have indicated. Minerva is reached by stage or buck-board from North Creek, which is at present the northern terminus of the Adirondack Railroad. If the people of the State of New York would visit these regions they might, possibly, come to feel a more intelligent and vital interest in their own possessions in the North Woods, and in the great river which has its sources here, and which is so necessary to the prosperity of the cities at its mouth. At present everything indicates that when the Adirondack region is completely ruined, if not before, the people of the State will at last awaken to a sense of its value, and will then, perhaps, take steps to obtain possession of it. It will cost vastly more then than it would now, and its value will be fatally impaired for centuries to come.

Elizabethtown, N. Y. *J. B. Harrison,*
Cor. Sec. American Forestry Congress.

The Adornment of Gardens.

To the Editor of GARDEN AND FOREST:

Sir.—Kemp, in his "How to Lay Out a Garden," a little volume brimful of excellent suggestions, says: "Gardening and architecture, like all the fine arts, have much in common—and that department of architecture which belongs more exclusively to the garden has especially a great affinity with gardening in its broader principles. In fact, there is much more relation between the two than is usually admitted, or than the ordinary products of practitioners in either art would at all justify us in believing."

I confess to a great admiration for those stiff, formal, geometrical gardens so prevalent in England during the eighteenth century, and whose disappearance was in great measure due to the writings of Addison, Pope and Walpole, and to the hands of Bridgman and "Capability" Brown. There was a direct, harmonious connection with the architecture of the day—they were stately and full of dignity, like the grand lords and ladies that walked in them. William Howitt thus pleasantly discourses in his "Rural Life of England:" "It has been the fashion to cry down all gardens as ugly and tasteless which are not shaped by our modern notions . . . yet the old French and Dutch gardens, as the appendages of a quaint, old house, are, in my opinion, beautiful. They are like many other things, not so much beautiful in themselves as beautiful by association—as memorials of certain characters and ages. If the taste of the present generation had been that of all past ages, what could there have been in the gardens of our past kings, nobles and historical characters to mark them as strongly and emphatically as they are now marked?"

In a modified way, these old gardens were those of our fathers in New England. They served to awaken associations with the past, and with very distant shores, which were still dear to them.

And they yet have their place. In the small public squares of cities and of the larger towns, in contracted suburban bits of ground where variety and irregularity are out of question, and in connection with the pretentious square or rectangular colonial house of the present taste—all that goes to make up the mathematical garden—would, if judiciously carried out, be extremely pleasing—for its novelty, if for no higher reason.

The proper and appropriate adornment of the architectural garden could not be mistaken. Its rectilineal gravel walks with its edgings of Box-wood, its statues, fountains, vases, formal trees and quaint topiary-work were, each and all in keeping with the symmetrical laying-out and with the adjoining buildings. Such, however, is not the case with the style of the present day. Incongruity is too often displayed. As examples, we may cite the disposal of fruit-trees among those of a strictly ornamental character; the cultivation of vegetables in the flower borders; the representation, in the surface of a lawn, of some inanimate object by means of variegated plants; the use of ornaments in a style different from the architecture of the house—not only immediately about but attached to the building.

This applies especially to rustic work. Not that I would by any means decry the æsthetic use of any object or material, however humble, but it must be in harmony with all that surrounds it. And this leads me to speak briefly of the material used in the construction of the suburban dwelling, a matter of the more importance if it has any pretentions to architectural beauty. Wood has long held its ascendency among us for this purpose, chiefly on account of its cheapness, and in a measure for sanitary reasons. It must, however, soon yield to stone or brick, as the tastes of the people improve. To a man of correct taste and judgment the idea of the want of solidity in the wooden house is unpleasant, especially, if as is generally the case, the appurtenances of the garden and adjoining grounds, such as terrace walls and steps, balustrades, pedestals, vases, etc., are made of the same material. Downing, who did much to improve the public sentiment in all that relates to such matters forty years ago, says: "In point of taste a house built of wood strikes us the least agreeably, as our pleasure in beholding a beautiful form is marred by the idea of the frailness of the material composing that form. . . . The strength with which it strikes a European accustomed to solidity and permanence in a dwelling, is the best proof of the truth of our remark."

Chestnut Hill, Mass. *D. D. Slade.*

The Cranberry Gall Fungus.

To the Editor of GARDEN AND FOREST:

Sir.—Some of the Cranberry bogs of New Jersey are infested with a disease which is known as the Gall Fungus, or by some called "red rust." In appearance to the naked eye it consists of a small, deep red, gall-like structure extending from the surface of the infested plant. The galls may appear upon any young-growing part, and in a badly attacked branch they are in large numbers upon the stem, leaves, flowers and finally the fruit. In extreme cases the whole surface of the diseased bog is reddened and the plants are stunted or killed and the crop is a failure. This fungus, when considered microscopically, is quite different from the rusts of the grain-fields, the smut of Corn, Oats and the like, the mildew of the Lettuce and the various moulds which attack many kinds of plants. For the present purpose, however, it may be only said that it belongs in the great group of fungi which contains thousands of strange and minute forms of plants, ranging in size from the puff-balls and toad-stools down to those so minute that a high magnifier is needed to make them appear of the real size of such fungi as bread mould and Grape mildew. The gall fungus of the Cranberry is one of the simplest forms of those peculiar parasitic plants.

In the inspection of the infested bogs it has been found that

at least five other kinds of plants are attacked by the same fungus. These plants are closely related to the Cranberry—belonging to the same family of plants and associated with the affected Cranberry plants. Some of these plants grow only upon the borders of the bog, and it was evident that the disease was confined to these plants located close to the bog. For example, the narrow-leaved Kalmia (here called Calf-kill) was badly attacked only when close by the bog. The same was true of Azalias, of Cassandra and certain species of Huckleberries. It seems quite probable that the infection in the form of spores reached these border plants during the time of high water.

There are many important points to be determined concerning the life history of this destructive pest, including the time and method of the dissemination of the spores. It will be necessary to learn, if possible, the present exact limits of the trouble and all the species of plants that are susceptible to the disease. It is hoped that all readers of GARDEN AND FOREST who are Cranberry growers will inspect their bogs and report if they find the disease present. If there still remains any doubt, the best way will be to send some suspected specimens to a competent mycologist. As soon as the disease is circumscribed, means may be taken for the eradication of the pest.

N. J. Exp. Station, July 17th, 1889. *Byron D. Halsted.*

Notes.

Mr. W. F. Massey has been appointed professor of horticulture, arboriculture and botany in the college of agriculture and the mechanic arts recently organized at Raleigh, North Carolina.

Professor Hartig suggests that the superior durability of wood, cut in the winter, may be largely due to the fact that it has time to dry on the outside before the atmospheric influences are favorable to the development of fungi. The spores of these are always about and in the summer at once attack freshly-cut wood, while in the winter they are dormant.

The grain plant-louse, *Aphis avenæ*, has seriously damaged the wheat crop from Ohio westward through Indiana, and as far north as Grand Rapids, Michigan. An invasion so serious has not happened for some years. There is little danger of a renewal of the attack next year, for the parasitic enemies of this pest multiply as rapidly as the Aphides themselves, and keep them in check.

Some exquisitely naturalistic reproductions of various Orchids are displayed by the Messrs. Tiffany & Co. at the Paris Exposition, wherein the most delicate tints and textures are imitated in gold, enamel and precious stones. *Odontoglossum Harryanum, O. zygopetalum, Cattleya bicolor, Vanda Sanderiana* and *Phalænopsis Schilleriana* are among the flowers most successfully used as models.

From a private letter we learn that the Black Rot and Mildew are so prevalent in Vineland and other parts of southern New Jersey that the Grape crop will be nearly ruined except where the vines have been treated with the Bordeaux Mixture. But it is hard to use this precaution and keep the leaves and berries fortified against the fungus when it rains seven days and nights in succession. Colonel Pearson writes that so far the Iron-clad Grape has escaped, while even weeds and forest-trees all about it are rotting and mildewing.

It is the practice in many English gardens to grow the Rose-Acacia (*Robinia hispida*) as a wall-tree. It is treated in this way because when grafted on a standard, as is usual, it is easily injured by high winds. But the additional warmth of the wall helps to ripen the wood and make strong buds, so that the racemes seem longer and the color more rich. A correspondent writes of a tree grown this way for several years, nailed to a sunny wall, and the result is that it blooms for a full month, and is then one of the most striking features of a famous garden.

The Hollyhock fungus (*Puccinia Malvacearum*) seems to have spread rapidly this year, for reports of it come to us from widely separated localities. This fungus was carried from Chili to France in 1872 and soon spread all over Europe. Three years ago it was introduced into the United States from Europe at Beverly, Massachusetts. Next year it appeared in the Boston Public Garden, and although the plants were pulled up and destroyed at the suggestion of Professor Farlow its progress was not arrested by these precautions, and it will probably spread all over the country.

The production of raisins in California has grown steadily year by year until it reached the amount of 1,250,000 boxes last year. Careful and systematic experiments have been made in cultivating, curing and packing the fruit, and several growers have visited Spain to investigate the methods practiced there. The result of this energy and study was seen in last year's pack which proved superior to that of any previous year in quality and attractiveness of appearance. California raisins are sweeter than those of Spain and they will keep more than twelve months, while the Spanish raisins will not last longer than six months without extra sugaring. There is likely to be some European demand for this year's crop of California raisins while Australia and other countries on the Pacific Ocean offer a hopeful market. At all events there is at present little danger that the industry will be overworked, for last year's enormous pack went at once into consumption at good prices and the market is already bare and hungry.

To several inquiries about the best nozzle for spraying plants where insecticides and fungicides are to be applied in this way, it may be answered that the Cyclone nozzle, perfected and recommended by Professor C. V. Riley, throws a spray as fine as a thin mist, but does not throw it far. For shrubs or small trees, the tops of which can be reached with a light bamboo pole, nothing can be better. It will completely and evenly wet the foliage without applying so much as to cause a drip. The finely-divided spray adheres easily, and the poison is economically and effectively applied. Another apparatus is called the Nixon nozzle. It is patented and is made and sold at Dayton, Ohio. Various sizes are made, the smallest throwing a spray as fine as the Cyclone's, and throwing it with much greater force. These nozzles can also be adjusted to throw a solid stream to a considerable height, the size and force of the stream varying with the size of the nozzle. Any good force-pump can be used with the nozzle. The nozzle company make machines adapted to all kinds of spraying.

The *Libraire Paul Klincksieck*, 15 Rue de Sèvres, Paris, is to publish in two volumes, accompanied with an atlas of 300 lithograph plates, an account of the plants of Yun-nan, based upon the collection of the Abbé Delavay, by M. A. Franchet, of the Paris Museum. Yun-nan is a vast province in the south-eastern part of the Chinese Empire, surrounded by Eastern Thibet, the Himalayas, Assam, Burmah and Tonquin. The plants of this vast region are now first known through the labors of a priest of the foreign missions of France, M. Delavay, who has been stationed during the last four years at Tapin-tze, near Lake Tali, and whose plants have been studied by M. Franchet. In the territory explored by Delavay he has gathered 3,200 species of plants, 1,200 of these being new to science. Plants of real ornamental value abound in Yun-nan. Among M. Delavay's discoveries are some forty species of Primrose, and as many new Rhododendrons; Evergreen Oaks, *Leguminosæ, Rosaseæ* and Orchids are numerous, and probably there is no part of the world from which so many valuable additions to garden plants can now be expected. The *Plantæ Delavayanæ* will be published in twenty parts (four or five a year). The price of subscription is 200 francs.

It is well known that plants of *Dictamnus Fraxinella* at the close of a dry, sunny day are surrounded by a gas which is inflammable and will ignite with a sudden flash of flame when a lighted match is applied to it. M. H. Correvon gives in *The Garden* the results of some investigations lately made with regard to this phenomenon. Certain plants, and very notably the *Rutaceæ* and *Labiatæ*, secrete various products, such as essential oils, resins, gums, balsams, etc. Secretory organs which are buried in the substance of the parenchyma elaborate these products, while hairs of various forms and textures conduct them to the surface and there excrete them. The secretory organs are termed internal glands, and the excretory hairs are known as external glands. These latter glands are surrounded at the base by a part of the epidermis, which the hair has pushed up in issuing forth to make its appearance on the surface of the stem, and in the Fraxinella this raised part of the epidermis covers a gland which is very richly provided with resin and essential oil. When this gland was examined with a microscope on a hot day it was empty, its contents having been drawn out by the heat through the cells of the epidermis or through the hair that terminates the gland. It must be understood that the surrounding air has to be pretty strongly impregnated with the gas of the volatilized resin in order to take fire when a lighted match is applied to it. This experiment has also been carried out in France by placing a pot-plant of Fraxinella in bloom under a bell-glass and leaving it there for some time, when the air in the bell-glass was found to be so highly charged with the resinous gas that it ignited the moment a lighted match was applied to it, and, it may be added, without doing the slightest injury to the plant.